AMENDMENTS TO THE CLAIMS:

This listing of claims will replace prior versions and listings of claims in the application:

Claims 31, 33, 35, 38 and 39 have been amended as follows: Underlines indicate insertions and ~~strikethrough~~ indicate deletions. Claims 32, 34 and 44 are cancelled. Claims 45 and 46 are newly added.

Listing of claims:

1. (withdrawn) A stem cell expansion factor comprising a blocker which reduces expression level of at least one gene normally limiting HOX-induced expansion of stem cells, whereby reducing expression level of said gene enhances expansion of stem cells containing a HOX peptide.

2-8. (cancelled)

9. (withdrawn) A nucleic acid construct for enhancing stem cells expansion, said construct comprising a first nucleic acid sequence for expression of a HOX peptide, wherein said peptide being able to cross a cell membrane, and a second nucleic acid sequence blocking expression of at least one gene normally limiting HOX-induced expansion of stem cells, whereby reducing expression level of said gene in the presence of a HOX peptide enhances expansion of stem cells, wherein said gene is a PBX1 gene.

10. (cancelled)

11. (withdrawn) The construct of claim 9, wherein said HOX peptide is a HOXB4 peptide.

12. (withdrawn) The construct of claim 9, wherein said stem cells are hematopoietic stem cells.

13. (withdrawn) The construct of claim 12, wherein said hematopoietic stem cells are human or mouse hematopoietic stem cells.

14. (withdrawn) The construct of claim 9, wherein said second nucleic acid sequence blocking PBX1 expression is an antisense DNA to PBX1.

15. (withdrawn) A composition for enhancing expansion of stem cells comprising a HOX peptide, wherein said peptide being able to cross a cell membrane, and a blocker which reduces expression level of at least one gene normally limiting HOX-induced expansion of stem cells, whereby reducing expression level of said gene in the presence of a HOX peptide enhances expansion of stem cells, wherein said gene is a PBX gene.

16. (cancelled)

17. (withdrawn) The composition according to claim 15, wherein said amino acid sequence consists of a HOXB4 peptide.

18. (withdrawn) The composition according to claim 15, wherein said amino acid sequence comprises an HIV-derived peptide able to cross a cell membrane.

19. (withdrawn) The composition according to claim 18, wherein said HIV-derived peptide consists of a NH_2-terminal protein transduction domain (PTD) from a transactivating protein.

20. (withdrawn) The composition according to claim 15, wherein said stem cells are hematopoietic stem cells.

21. (withdrawn) The composition according to claim 20, wherein said hematopoietic stem cells are human or mouse hematopoietic stem cells.

22. (withdrawn) The composition according to claim 15, wherein said blocker is a nucleic acid sequence blocking PBX expression.

23. (withdrawn) The composition according to claim 22, wherein said blocker is an antisense DNA to PBX1.

24. (withdrawn) A composition for enhancing expansion of stem cells comprising a nucleic acid sequence for overexpression of a HOX peptide, and a blocker which reduces expression level of at least one gene normally limiting HOX-induced expansion of stem cells, whereby reducing expression level of said gene in the presence of an overexpressed HOX peptide enhances expansion of stem cells, wherein said gene is a PBX gene.

25. (cancelled)

26. (withdrawn) The composition according to claim 24, wherein said HOX peptide is a HOXB4 peptide.

27. (withdrawn) The composition according to claim 24, wherein said stem cells are hematopoietic stem cells.

28. (withdrawn) The composition according to claim 27, wherein said hematopoietic stem cells are human or mouse hematopoietic stem cells.

29. (withdrawn) The composition according to claim 24, wherein said blocker is a nucleic acid sequence blocking PBX expression.

30. (withdrawn) The composition according to claim 29, wherein said blocker is an antisense DNA to PBX1.

31. (currently amended) A method for enhancing expansion of stem cells, which comprises treating stem cells_with an effective amount of a stem cell expansion

factor for a time sufficient to allow expansion of said stem cells said factor comprising a blocker which reduces the expression level of at least one PBX gene, whereby reducing the expression level of said PBX gene enhances expansion of stem cells containing a HOXB4 peptide~~as defined in claim 1, or an effective amount of a composition ;as defined in claim 15 for a time sufficient to allow expansion of said stem cells.~~

32. (cancelled)

33. (currently amended) The method of claim 31, further comprising a step of treating said stem cell with a HOXB4 peptide encoded by a HOXB4 nucleotide sequence.

34. (cancelled)

35. (currently amended) The method of claim 33, wherein said ~~amino acid sequence~~HOXB4 peptide comprises an HIV-derived peptide able to cross a cell membrane.

36. (previously presented) The method of claim 35, wherein said HIV-derived peptide consists of a NH_2-terminal protein transduction domain (PTD) from a transactivating protein.

37. (original) The method of claim 31, wherein said stem cells are hematopoietic stem cells.

38. (currently amended) The method of claim 37, wherein said hematopoietic stem cells are human ~~or mouse~~ hematopoietic stem cells.

39. (currently amended) The method of any one of claims 31, 33 and 35 to 38, wherein said stem cells are treated *in vitro*~~, *in vivo* or *ex vivo*~~.

40. (cancelled)

41. (withdrawn) A method for restoring hematopoietic capability of a patient, which comprises administering a therapeutical effective amount of a factor as defined in claim 1.

42. (withdrawn) A method for restoring hematopoietic capability of a patient, which comprises administering a therapeutical effective amount of a construct as defined in claim 9.

43. (withdrawn) A method for restoring hematopoietic capability of a patient, which comprises administering a therapeutical effective amount of a composition as defined in claim 15.

44. (cancelled)

45. (new) The method of claim 31, wherein said blocker is a nucleic acid sequence blocking the expression of said at least one PBX gene.

46. (new) The method of claim 45, wherein said blocker is an antisense DNA to PBX1.